San Gorgonio Pass Wind Energy Project

Decision Options Document

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BUREAU OF LAND MANAGEMENT

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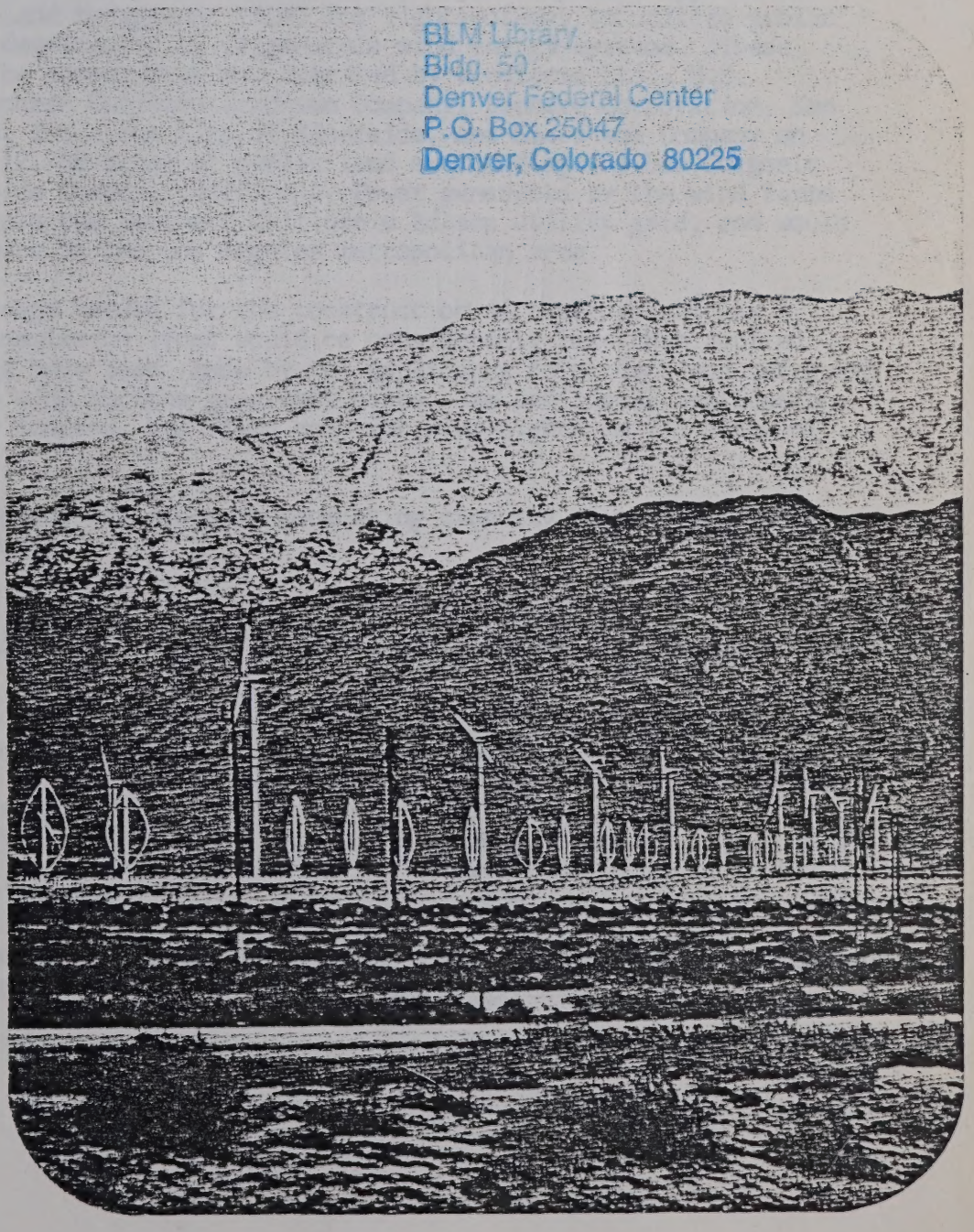

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I. SUMMARY:

A. Introduction

Five private developers, one utility and a major city have applied to the Bureau of Land Management (BLM) for rights-of-way to utilize public lands for the development of large-scale wind energy systems. These systems would be constructed and operated by Windfarms Ltd., U.S. Windpower, Southern California Edison Company, PanAero Corporation, San Gorgonio Farms, Inc., the City of Riverside, and Smart and Company on approximately 12,780 acres of public land surrounding the San Gorgonio Pass in Riverside County, California. Power generated by the wind farms would be fed into the Southern California Edison utility grid, and would service Customers in the Los Angeles metropolitan area.

The actual acreage needed for the construction of turbines, access roads, and transmission lines would be considerably less than applied for, as filings have been made by the applicants to protect and safeguard wind access to wind turbine generator sites. An additional application, Natomas Energy Company, has filed only for wind rights on 775 acres of public lands.

At full development the electric generating capacity of the wind energy proposals would be:

Applicants	Installed Capacity (Megawatts)	Power Output (Million kWh/yr)
Windfarms	244.0	631.0
U.S. Windpower	137.5	475.5
Southern California Edison	105.5	245.7
PanAero	390.5	1,163.5
San Gorgonio Farms	17.8	59.2
City of Riverside	20.0	69.0
Smart	24.0	144.0
Natomas Energy Company	0.0	0.0

Because a number of developers have filed competing applications (overlapping) for the same area, no combined energy total is given.

B. Decision Options

1. Alternative One: Applicants Proposed Actions

Windfarms

Windfarms, Ltd. of San Francisco would construct sixty-one wind turbine generators on 8,332 acres of public lands and 845 acres of private lands. Two types of wind turbines are being considered for the project. These are the Boeing MOD-2 WTGs rated at 2.5 MW and the Hamilton Standard rated at 4.0 MW. The turbines would be built in four phases between 1983 and 1990. The proposed wind farm would be located on the hills to the north of the pass (Whitewater Canyon) and in the Whitewater River floodplain outside Palm Springs. The project would require approximately sixteen miles of new road and ten miles of underground transmission lines to interconnect the wind turbine generators.

U.S. Windpower

U.S. Windpower of Burlington, Massachusetts proposes the development of a wind farm consisting of 2,750 turbines located on 3,600 acres of public lands. The 50 kilowatt USW 56-50 turbine would be sited in three phases: Whitewater Canyon (900 machines), Whitewater Hill-Windy Point (350 windmills) and the Whitewater River floodplain (1,500 turbines). Construction would occur between 1983 and 1987. Approximately 55 miles of road and 54 miles of overhead transmission lines would be required to connect the wind farm to the utility grid.

Southern California Edison

Southern California Edison has applied on behalf of six developers to construct six wind parks on 2,800 acres of public lands. These developers would inlcude Boeing, Bear Sterns/Bendix, WECS Tech, U.S. Windpower, Westinghouse, and Ventus. The Boeing wind park would consist of five 2.5 MW MOD-2s. Bear Sterns-Bendix proposed construction of five 4.5 MW turbines north of Whitewater Hill. WECS Tech would construct 55 100-kilowatt turbines on Whitewater Hill. The U.S. Windpower proposal would correspond to a small portion of their separate proposal described above (100 machines). Westinghouse would erect sixty 500-kilowatt turbines in the Whitewater Floodplain northwest of Palm Springs. Ventus would also place 200 towers mounting 800 37.5 kilowatt turbines in the floodplains. Construction would begin in 1983 and be completed in 1985. Approximately 25 miles of roads and 30 miles of underground transmission lines would be required.

PanAero

PanAero Corporation would construct a total of 309 wind turbines on 9,270 acres of public lands. Three turbine types would be used: the 4.0 MW Hamilton Standard, the 500-kilowatt Westinghouse, and the 500-kilowatt DAF Indal. Four facilities would be constructed: Desert Hot Springs (109 turbines), Whitewater Canyon (112 turbines), Seven Palms Valley (63 turbines), and Cathedral City (25 turbines). Construction would occur between 1983 and 1990. Approximately 29 miles of roads and 28 miles of overhead transmission lines would be required.

San Gorgonio Farms

San Gorgonio Farms, Inc., of San Pedro, California, would construct 95 wind turbines on 280 acres of public lands near Whitewater Hill. These turbines would be erected in three phases beginning with the construction of sixty 25-kilowatt J. Carter machines. The second phase would incorporate thirty 125-kilowatt J. Carter turbines, and the last phase five Boeing MOD-2s. Construction would begin in 1983 and be completed in 1986. Approximately six miles of new road and transmission lines would be required.

City of Riverside

The Public Utilities Department for the City of Riverside proposes the construction of eight MOD-2 generators on 360 acres located north of San Gorgonio Pass. Construction would occur in three phases between 1983 and 1989. Approximately four miles of new road and three miles of underground transmission lines would need to be built to support WIG siting.

Smart and Company

Smart and Company of Hermosa Beach, California would construct twelve 2 MW Merkham wind turbines on seventy acres of public lands on top of Windy Point. Construction would occur in five phases, beginning in 1983 and finishing in 1986. Approximately one mile of road and one mile of overhead transmission line would be required on public lands.

2. Alternative Two: Development on Lands Except Those With Significant Surface Conflicts

This alternative would allow development on public lands except for those areas which have been identified as having resources extremely sensitive to development. These lands include a compilation of sensitive habitat for wildlife, fragile slopes (over 25 percent) and visual resource values. Parcel boundaries and development restrictions (such as turbine size and setbacks) would mitigate adverse impacts which occur in Alternative 1.

Leasing would be subject to the mitigation measures proposed in the Final San Gorgonio Wind Energy Project EIS with the exception of the measure requiring undergrounding of all transmission lines 34.5 KV and below. All leases would be subject to the Standard Operating Procedures defined in the Final EIS. Both the mitigation measures and standard operating procedures are attached to this document. The parcel boundaries, as defined on Map 2-6, (alternative two) in the Draft EIS, with the revisions as noted in the Final EIS on Section 26, T. 3 S., R. 5 E. are the accepted parcel configurations.

The elimination of undergrounding is due to excessive additional costs on the developers and consumers that does not significantly reduce visual impacts. The area of development has considerable visual disturbances including existing transmission lines, telephone lines, roads, and railroads. In addition, the floodplain areas will pose additional construction and maintenance difficulties if undergrounding is mandatory.

On noncompetitive parcels where only one applicant has applied for a right-of-way, a grant would be issued on that basis. Where two or more applicants have applied for the same area, award of a right-of-way grant would be by modified-competitive bid. The power output available at full development for each of the eight applicant proposals after application of environmental constraints would be as follows:

Applicants	Installed Capacity (Megawatts)	Power Output (million KWH/yr)
Windfarms	57.5	335.6
U.S. Windpower	56.1	203.8
Southern California Edison	23.9	59.1
PanAero	163.0	776.6
San Gorgonio Farms	2.5	8.4
City of Riverside	17.5	60.4
Smart	0.0	0.0
Natomas Energy Company	0.0	0.0

3. Alternative Three: No Action

No wind energy development would be allowed. Management on public lands would continue under the guidelines of the California Desert Plan (BLM, 1980).

C. Recommended Decision

The recommended decision, Alternative Two, would allow competitive and non-competitive right-of-way grants on public lands in the San Gorgonio Pass for the development of wind energy resources. The energy produced could provide electricity for 121,000 homes in the Southern California area, saving approximately $52 million per year in imported oil costs.

From 45 to 103 megawatts of installed capacity would be provided from six competitive parcels and another 78 megawatts from four non-competitive parcels. A maximum of 850 million kilowatt hours of electrical energy would be generated for power consumption.

Under the recommended decision, development would be allowed to proceed on a majority of the area under application. Most of the applicants would be eligible to develop their projects within the Pass, subject to the results of the modified competitive bid process. Therefore, a variety of approaches encompassing a number of wind turbine technologies for utilizing the area's wind resources would be provided. In addition, the alternative's development restrictions would help protect the Pass' unique and sensitive resources, including its visual landmarks, recreation opportunities, and wildlife. Wind development would also be regulated to prevent interference with communication facilities and adequate measures would be provided to avoid or minimize hazards to the public health and safety.

The issuance of grants to proceed would be consistent with the principals and procedures of 43 CFR Part 2800 and the goals and objectives in the California Desert Plan. It is the policy of the Bureau to provide access and availability to public lands for the exploration, production, and utilization of its energy resources.

II. PURPOSE AND NEED

The purpose of the wind energy project evolves from a national and state need to develop alternative energy sources. The projects would harness the previously untapped energy producing potential of the San Gorgonio Pass region, an area with the capability of providing one of the Nation's most productive wind generating sources. Development of the wind resource would help meet, in part, the forecasted need for power by the year 2000 in California, reduce dependency on oil and gas for generating electricity, furnish access to the economy energy market, and enhance utility system flexibility.

A. Help Meet the Need for Power by the Year 2000 in California

In its 1981 report, Electricity Tomorrow, the California Energy Commission (CEC) estimates that by the year 2000, an additional 2,000 megawatts (MW) will be required to meet SCEs steadily increasing demands. To help meet this forecasted increase, Southern California Edison has proposed using wind energy to supply 560 MW of installed capacity by 1992, roughly 25 percent of the project additional increase. Southern California Edison plans to reach this capacity through power purchase agreements with private developers. The proposed wind energy project in the San Gorgonio Pass would provide SCE with a significant portion of this capacity.

B. Reduce the Dependency of Oil & Gas Consumption for Generating Electricity

The 1973-74 Middle East oil embargo sharply focused State and national attention on the nation's energy supply and the inherent vulnerability caused by the increasing dependency on foreign supplies. This situation resulted in nationwide efforts to reduce reliance through development of domestic fossil and non-fossil fuel energy sources. California was especially hard pressed because about 59% of the State's energy came from gas and oil.

From the extensive analysis of options that followed the embargo, wind energy emerged as a bright prospect. In 1979, the CEC concluded that, "Of all of the alternative solutions proposed for resolving the energy dilemma, wind energy systems are one of the most attractive. The development of California's renewable energy sources such as wind, solar,small hydro, and biomass, as well as geothermal and efficient cogeneration remain one of the State's highest priorities. Focusing public and private capital towards investments in these options and distributing their benefits widely and fairly among California's citizens is the State's overriding policy objective for the electricity sector.

Southern California Edison's ten year resource plan calls for generation of 2,100 MW of power from renewable resources by 1990. Electrical power generated from wind would contribute almost 7 percent of these needs and provide 1,226 million kilowatt hours on an annual basis. In terms of annual oil savings, this would displace the equivalent of two million barrels of oil. With the first turbines coming on line in 1983, wind energy could provide an almost immediate contribution to the grid system.

C. Furnish Access To The Economy Energy Market

Development of the San Gorgonio wind resource would provide SCE access to lower-cost, non-oil fired power to displace energy currently generated in the Los Angeles area. Potential savings, based on California Energy Commission estimates, could range from $11,000 to $58,000 per million kWh or an average of $43,000,000 per year by 1990.

D. Enhance System Flexibility

The intergration of a wind energy source into the utility system would permit capacity and energy exchanges between SCE and other utilities during emergency situations, thus improving the efficiency and economics of the total system. Primary fuel sources (oil and gas) would be diversified so that impacts resulting from the interruption of any one type of fuel supply would be minimized.

III BACKGROUND

A. Existing Land Uses

Pacific Crest Trail - Under the proposed decision two-thirds of a mile of the Pacific Crest Trail (PCT) would be subject to impact. The trail would not be blocked, but the presence of the machines would impair the recreation experience. A 1-1/4 blade diameter safety easement would be provided.

Whitewater Wilderness Study Area - Development is proposed within non-suitable portions of the Wilderness Study Area once the area is released from wilderness consideration by Congress. No development will be allowed in areas designated as suitable for wilderness preservation.

The City of Palm Springs Proposed Whitewater Regional Park - An application was received in March 1982 for R&PP lease of the BLM managed areas within the 100-year Whitewater River floodplain by the City of Palm Springs. After extensive coordination with the City and careful evaluation of the application, the decision is now being made to delete the parcels that overlapped with the earlier wind development applications proposed in Alternative Two. There is, however, still an opportunity for the City, if they desire, to lease parcels in the area, deemed non-suitable for wind energy, by submitting a revised application. It may also be possible to integrate energy and park proposals at that time, especially if an interpretive stop can be incorporated; otherwise a center will be pursued with the County or applicants.

Residential Conflicts - With the application of mitigation measures that significantly reduce or eliminate impacts which are caused by noise, safety, disruption of microwave transmission and television and FM radio reception, the impacts caused by these factors would be insignificant to adjacent property owners. The visual mitigation measures are reasonably effective in diminishing impacts, but camouflage would not be entirely successful in every case.

Range Improvements - Mitigation measures will reduce disturbance to range cattle by holding the wind developer responsible for costs incurred by grazing allottees if additional range improvements are necessitated by changes brought about by wind development.

Whitewater ACEC - Mitigation measures will reduce disturbances caused from the construction of turbines, towers and roads. The Whitewater ACEC plan should be completed soon, and it appears conflicts will be insignificant.

B. Key Issues

1. Public Participation and Concerns

A news release announcing the Bureau of Land Management's plans to prepare an Environmental Impact Statement (EIS) to evaluate the potential for leasing areas in the San Gorgonio Pass for wind energy development was issued in March 1981. The news release discussed the proposal and listed the names and telephone numbers of BLM officials who could provide more information. The formal notice of intent to prepare the EIS was published in the Federal Register on March 11, 1981.

The Bureau, in cooperation with Riverside County, held several "scoping" meetings during April 1981 to present the proposed project to the public for comment and review. Participants at these meetings identified seven major issues of concern:

a. Aesthetics: Wind turbines would be highly visible due to their size. The San Gorgonio Pass area has been rated by the BLM as having a relatively high visual sensitivity based on high use volume and user attitudes.

b. Safety: There is a remote chance that a blade could separate from a turbine and be thrown some distance. Other safety concerns include the relatively slight possibilities of tower collapse, aircraft and electrical safety.

c. Noise: Both the construction and operation of turbines would create noise. While operational noise is not expected to be loud, problems associated with experimental turbines have arisen occasionally in the past, most notably the "thumping" sounds produced by the MOD-1 turbine in Boone, North Carolina.

d. Electromagnetic Interference: Wind turbine blades can cause interference with microwave beams, local television, FM radio and two-way radio transmission, and VORTAC signals.

e. Ecology: Birds may collide with the turbines. Development of wind parks may fragment or destroy the habitat of the Coachella Valley fringe-toed Lizard, listed as a Federal threatened and State endangered species.

f. Land Use: Wind turbine development may effect or preclude other uses of these public lands, including agriculture, recreation and wilderness uses.

g. Wind Access and Equity: Successful wind development demands a supply of wind at a given velocity, direction, frequency and duration. Constructions upwind of a turbine, including other turbines, can reduce this supply if placed too close together. Turbines placed too close to a downwind property line may obstruct some of the wind supply on the adjoining property.

During the preparation of the Draft Environmental Impact Statement (DEIS), other Federal offices, state and local agencies, interest groups and individuals were contacted. Communications varied from formal written correspondence to informal personal contact and telephone calls. Information concerning the proposed action and BLM's preparation of this document was covered by local, regional, and statewide media.

A 30-day public comment period (May 7-June 6, 1982) began subsequent to filing the DEIS with the Envrionmental Protection Agency (EPA). A BLM notice advertising availability of the DEIS was published in the May 3, 1982, issue of the Federal Register. This notice announced the review period and a notification of a public meeting in Palm Springs. Over 400 copies were distributed to reviewing agencies and interested publics. Reading copies of the DEIS were available at appropriate libraries, the BLM Washington Office, California State Office, Desert District and Indio Area Office. News releases were issued from the California State Office and Area/District Office to local and regional news media.

Several public meetings in conjunction with the County were held at Palm Springs, Riverside, and for other groups. Even though some local residents (especially at Bonnie Bell and Trout Farm) have some objections, for the most part, people who attended the meeting appeared to be interested and supportive of the new energy concept. Formal comments were minimal.

The Final EIS was mailed to those who participated in the EIS process, including those who commented on the Draft EIS. Copies of the Final EIS were available for review at the BLM California State Office, Desert District Office and at the appropriate public libraries.

2. Federal, State, and County Government Participation and Concerns

BLM's proposal to permit wind energy development on public lands in the San Gorgonio Pass is consistent with the objectives of the Wind Energy Systems Act of 1980 and the Powerplant and Industrial Fuel Use Act of 1978. The Wind Energy Systems Act was established to promote the growth and acceleration of a commercially viable and competitive wind industry and establishes a national goal of producing 800 MW of wind power by 1986. Almost one-quarter of this amount would be met by the San Gorgonio Wind Project by the end of this decade. Moreover, the development of generation capacity from wind energy sources would decrease this nation's dependence on oil-fired generation saving approximately $52 million per year in imported oil costs.

Siting of wind energy facilities would meet Statewide policies promoting the development of wind energy as a preferred technology for commercial electrical generation. Public Resources Code Section 25611 establishes a goal of providing 10 percent of the State's energy requirements from wind by the year 2000.

In July 1981 the BLM entered into a Memorandum of Agreement (MOA) with Riverside County to prepare a joint environmental document (EIR/EIS) assessing the generic or cummulative impacts of wind development in the San Gorgonio Pass area. The draft document was released for public review on April 23, 1982. The final EIR/EIS is expected to be completed in July 1982. In addition, the CEC and CPUC agreed under separate Memorandum of Understandings to assist BLM in the preparation of the generic EIR/EIS and the site-specific assessment (EIS) of individual applications to site wind turbine facilities on public lands. Coordination with these agencies will be provided on an ongoing basis.

A formal consultation with the U.S. Fish and Wildlife Service (USFWS) regarding possible impacts on the threatened Coachella Valley Fringe-toed Lizard was completed. It was the "Biological Opinion" of the USFWS that approval to lease the parcels as described in Alternative Two "...would not likely jeopardize the continued existence of the Coachella Valley Fringe-toed Lizard nor adversely modify its Critical Habitat."

Comments have also been received from the Bureau of Reclamation, Geological Survey, Environmental Protection Agency, California Department of Fish and Game, California Department of Health Services, California Department of Transportation, California Department of Parks and Recreation, Riverside County Planning Department, the Desert Water Agency and the Palm Springs Planning Commission. Indian interests were coordinated with no apparent dissatisfaction.

The following opinions are among those expressed by Federal, state, county and city governments, to which adoption of Alternative Two does not totally resolve:

OPINION	AGENCY RESPONSIBLE FOR PROPOSAL
1. No development should be allowed within or immediately adjacent to the Coachella Valley Fringe-toed Lizard Research Natural Area.	The Resources Agency
2. A land acquisition program to replace wildlife habitat destroyed through project construction should be required as a part of the project cost for each applicant. In addition, a portion of money received by the Federal Government from grants, rentals and royalities should be used as part of a mitigation program to offset losses of habitat.	The Resources Agency

3.	A 3 x turbine height property line set back should be implemented from any mon-BLM owned parcels instead of the policy proposed by BLM (1 1/2 blade diameter from east west property lines and 3 blade diameter widths from a north-south property line).	County of Riverside, Planning Staff
4.	Change Categories I and II to Significant Potential Fault Hazard.	County of Riverside, Planning Staff
5.	Setbacks to existing residential developments with the city limits and sphere of influence should be increased to two miles until sufficient testing has occurred.	City of Palm Springs Planning Staff
6.	A one mile setback from Highway should be imposed	City of Palm Springs Planning Staff
7.	The PCT should have a 2/3 mile setback.	City of Palm Springs Planning Staff
8.	Transmission lines 34.5 kv and below should be underground as proposed in the final EIS.	City of Palm Springs and County Planning Staff

IV. Comparison of Alternatives

ALTERNATIVE 1 (APPLICANT'S PROPOSALS)	ALTERNATIVE 2 (DEVELOPMENT RESTRICTED TO LANDS WITHOUT SIGNIFICANT SURFACE CONFLICTS)	ALTERNATIVE 3 (NO ACTION)
AESTHETIC VALUES		
Moderate to strong visual impacts in North Whitewater Canyon, Whitewater Hill and Devils Garden. Portions of these areas would be highly visible to travelers along Interstate 10, Route 62, Palm Springs, and Desert Hot Springs.	WTGs would remain a distinct element in the landscape. Design clusters would reduce the visual dominance of towers.	The development that occurs now is significantly less visually impacting than the proposed wind developments.
Impacts would result from development on steep slopes (over 25 percent) along the southern slopes of Alta Mesa, North Whitewater Canyon, Devils Garden, Windy Point and Whitewater Hill.	Highway setbacks and development restrictions on slopes over 25 percent would reduce impacts.	
Density and mixture of machines types would create strong impacts in the "wash" and Whitewater Hill areas. The solid mass of turbines, which when viewed from residential areas and Interstate 10, would result in a strong "clutter" effect, in floodplain areas.	Development in the floodplain would remain highly visible. However, visual quality would not be significantly impaired.	

ALTERNATIVE 1 (APPLICANT'S PROPOSALS)	ALTERNATIVE 2 (DEVELOPMENT RESTRICTED TO LANDS WITHOUT SIGNIFICANT SURFACE CONFLICTS)	ALTERNATIVE 3 (NO ACTION)
Density and mixture of machine types would result in moderate to strong impacts on the landscape.	Use of single WTG types, would diminish "clutter" and disorder of mixed arrays in North Whitewater, Alta Mesa and Cabazon.	
Use of overhead transmission lines would create vertical and color contrast.	Use of overhead transmission lines would create vertical and color contrast.	
SAFETY		
Low to moderate potential for tower failure and/or blade throw. Ease of access to WTGs could lead to vandalism. Some interference with other land uses such as highways, flood improvements, railroads, etc.	Setback requirements from public roads, buildings, utility lines and other land uses would provide a buffer zone in the event of machine collapse or blade throw. Potential safety hazard would be low.	No impact.
NOISE		
General operational noise may be a problem for the community of Bonnie Bell from development of large turbines north of Alta Mesa and in the Whitewater floodplain. "Thumping" sound may result where downwind turbines are sited.	Development would meet County and Federal standards. "Thumping" sound would not present a noise problem.	No impact.

ALTERNATIVE 1 (APPLICANT'S PROPOSALS)	ALTERNATIVE 2 (DEVELOPMENT RESTRICTED TO LANDS WITHOUT SIGNIFICANT SURFACE CONFLICTS)	ALTERNATIVE 3 (NO ACTION)
ELECTROMAGNETIC INTERFERENCE		
Turbines would interfere with microwave transmission in the area north of Alta Mesa, on Whitewater Hill and in the Whitewater Floodplain.	Microwave interference would be eliminated.	No impact.
Potential interference to television reception.	Television visual distortion would be minimal.	
Some interference to two-way radio communication.	Some interference to two-way radio communication.	
No impact on VORTAC signals is anticipated.	No impact on VORTAC signals is anticipated.	
ECOLOGY		
Potential exists for low incident rates of collisions between birds, WTGs, and overhead transmission lines. High impacts on migrating birds and waterfowl using the Whitewater Settling Ponds. Birds using updrafts along the east rim of Whitewater Canyon would come into contact with the blades of large turbines.	Potential collisions between birds and WTGs would be the same as Alternative 1. Low impact on migratory birds using the Whitewater Settling Ponds. Siting of large turbines along the east rim of Whitewater Canyon would be defered until studies are completed in the fall of 1982.	Slight impact due to continued use of off-road-vehicle and recreation use.
Hazard of raptor electrocutions from overhead transmission lines.	Potential for raptor electrocutions would be eliminated.	

ALTERNATIVE 1 (APPLICANT'S PROPOSALS)	ALTERNATIVE 2 (DEVELOPMENT RESTRICTED TO LANDS WITHOUT SIGNIFICANT SURFACE CONFLICTS)	ALTERNATIVE 3 (NO ACTION)
Surface disturbance due to construction of WTGs in the Whitewater floodplain would directly impact from 53 to 120 acres of habitat used by the Coachella Valley Fringe-toed lizard -- federally listed as threatened and state listed as endangered. The effects of large turbine arrays on sand transport and deposition is unknown. Noise from large wind turbines would adversely impact lizard populations.	Construction would result in 36 to 50 acres of surface distance to CVFTL habitat.	Disturbance to CVFTL habitat would continue with ORV use.
The presence of turbines may force bighorn sheep to retreat a distance of one mile from the nearest WTGs, affecting 6 to 8 square miles of habitat in North Whitewater Canyon. From 2 to 2½ square miles of habitat utilized by Peninsular bighorn sheep would be adversely impacted near Windy Point.	3 to 4 square miles of bighorn sheep habitat would be disturbed in Whitewater Canyon. No Peninsular sheep would be impacted.	No impact.
LAND USE		
Recreational experience on 3 miles of the Pacific Crest Trail would be altered in Devils Garden, lower Whitewater Canyon and portions of the floodplain north of Windy Point.	Less than 1 mile of the PCT would be impacted by WTG development. Safety hazards would be minimal.	Trail users would not experience the unique sights of wind energy development.

ALTERNATIVE 1 (APPLICANT'S PROPOSALS)	ALTERNATIVE 2 (DEVELOPMENT RESTRICTED TO LANDS WITHOUT SIGNIFICANT SURFACE CONFLICTS)	ALTERNATIVE 3 (NO ACTION)
Locating WTGs in alternating sections of public lands in the Whitewater floodplain would change recreational land use patterns for ORV enthusiasts, sunbathers, etc. Up to 1,300 acres presently viewed as "open space" would be eliminated. Access would generally be maintained between rows of turbines. Development would not preclude the inclusion of public lands into the Whitewater Regional Park, although the quality of recreational experience would be less.	Similar to Alternative 1 except 40 to 60 percent of the areas would remain undeveloped. Setbacks would provide a minimum 500 foot corridor for recreationists.	No impact.
Construction would preclude 200 acres within the Whitewater Wilderness Study Area (presently recommended as non-suitable) from future wilderness designation.	Same as Alternative 1.	Preserve the option of adding public lands to the National wilderness system.
Development may significantly impact Native American values in Whitewater Canyon and Devils Garden.	Values in Devils Garden would be preserved.	
WIND ACCESS AND EQUITY		
Issue of equity and resource allocation would remain unresolved.	Restrictions of access and allocation would provide an equitable solution through setbacks from property lines adjoining public lands.	Not applicable.

ALTERNATIVE 1 (APPLICANT'S PROPOSALS)	ALTERNATIVE 2 (DEVELOPMENT RESTRICTED TO LANDS WITHOUT SIGNIFICANT SURFACE CONFLICTS)	ALTERNATIVE 3 (NO ACTION)
SOCIAL AND ECONOMIC		
Impacts on employment, housing and tourism would not be significant. Property tax revenues would exceed $9 million per year.	Same as Alternative 1. Property tax revenues would range from $2.7 to $4.4 million.	No property tax revenues would be passed to the State.
GEOTECHNICAL AND SOILS		
Road and WTG construction would destroy the desert crust and erosion pavement rendering the exposed soil surface vulnerable to accelerated wind erosion.	Same as Alternative 1 except that the total number of miles of new road would be reduced approximately 20 percent.	No additional road construction. Soil erosion would be low to moderate with continual use of public lands by ORVs.
HYDROLOGICAL CONDITIONS AND FLOODPLAINS		
Loss of previous land surface in the Whitewater floodplain would decrease infiltration adding to surface runoff.	Less impacting than Alternative 1 due to a 40 to 60 percent reduction in areas subject to wind development.	No impact.
POWER OUTPUT AND ELECTRICAL GENERATION		
From 18 to 390 MW of installed capacity would be produced generating 60 to 1,200 million kWh per year.	From 123 to 181 MW of installed capacity would be produced generating a maximum of 850 million kWh per year.	The wind energy resource would not be developed and other power sources such as coal and oil would be needed to meet future energy demands.

V. SUMMARY OF PARCEL CONSTRAINTS

PREFERRED ALTERNATIVE

ALTERNATIVE TWO

Parcel	Applicant	Constraints Applied in Determining Boundaries	Number of Wind Turbine Generators Eliminated from Development: Windfarms	U.S. Windpower	Southern California Edison	PanAero	San Gorgonio Farms	City of Riverside	Smart
Cabazon Non-competitive 15 acres	PanAero	- Wind access setbacks - 25 percent slope restrictions	NA	NA	NA	4 medium NA	NA	NA	
North Whitewater Competitive 409 acres	Windfarms U.S. Windpower Southern California Edison PanAero City of Riverside	- 25 percent slope restrictions	3	72	11	7 medium 4 large		0	
		- No large turbines would be permitted along beam path DD-EE except between 700 and 2300 feet from microwave transmitting site EE.	0	0	NA	0		0	
		- No large turbines would be permitted along microwave beams FF-EE and EE-GG.	0	NA	NA	0		1	
		- Wind access setbacks.	0	0	0	0		0	
North Whitewater Non-competitive 35 acres	PanAero	- 25 precent slopes - Large machines only (visual constraints) - No development in Wilderness area				17 medium 6 medium 5 large			

V. SUMMARY OF PARCEL CONSTRAINTS

PREFERRED ALTERNATIVE

ALTERNATIVE TWO

Parcel	Applicant	Constraints Applied in Determining Boundaries	Number of Wind Turbine Generators Eliminated from Development						
			Windfarms	U.S. Windpower	Southern California Edison	PanAero	San Gorgonio Farms	City of Riverside	Smart
North Whitewater Non-competitive 70 acres	U.S. Windpower	- 25 percent slopes		49					
		- Wind access setbacks		6					
Alta Mesa Competitive 68 acres	PanAero U.S. Windpower Windfarms	- 25 percent slope restrictions	0	113		4 medium 1 large			
		- Additional VRM setback along southwest boundary of the top of the Mesa, including relocation of one windfarm turbine	0	NA		0			
		- Wind access setbacks	0	0		0			
Alta Mesa West Non-competitive 49 acres	U.S. Windpower	- 25 percent slopes		65					
		- Wind access setbacks		18					
Alta Mesa East Non-competitive 3 acres	Windfarms	- 25 percent slopes and/or wind access setbacks	1						

V. SUMMARY OF PARCEL CONSTRAINTS

PREFERRED ALTERNATIVE

ALTERNATIVE TWO

Parcel	Applicant	Constraints Applied in Determining Boundaries	Number of Wind Turbine Generators Eliminated from Development						
			Windfarms	U.S. Windpower	Southern California Edison	PanAero	San Gorgonio Farms	City of Riverside	Smart
Whitewater Hill Competitive 35 acres	Windfarms U.S. Windpower Southern California Edison San Gorgonio Farms	- Area south of the east-west road leading to the summit of Whitewater would be eliminated due to visual setbacks (because of the presence of high, steep hillsides next to I-10, the normal scenic highway setback -- was not felt necessary)	2/	51	33		33 small 5 large 5/		
		- Turbine on top of the Hill just south of the microwave transmitter would be eliminated due to interference with microwave beams.	2/				1 large		
		- No turbines would be located within 0.4 miles of the microwave transmitter on the top of the Hill along beam path N-P	0	31			19 small		
		- Remaining small and large turbines would be eliminated by visual mitigations	0	13	9		4		

V. SUMMARY OF PARCEL CONSTRAINTS

PREFERRED ALTERNATIVE

ALTERNATIVE TWO

Parcel	Applicant	Constraints Applied in Determining Boundaries	Number of Wind Turbine Generators Eliminated from Development: Windfarms	U.S. Windpower	Southern California Edison	PanAero	San Gorgonio Farms	City of Riverside	Smart
		(on Whitewater Hill)	3	0	0		5/		
		- Wind access setbacks							
Whitewater Floodplain 14 Competitive 63 acres	Windfarms U.S. Windpower Southern Calif. Edison Pan Aero	- Wind access setbacks	N/A	18	5	15 medium 9 large			
		- Scenic highway setbacks		12					
		- No turbines would be permitted along microwave beam B-E		0					
		- Pacific Crest Trail Setbacks		8					
Whitewater Floodplain 20/28 Competitive 625 acres	Windfarms U.S. Windpower Southern California Edison Pan Aero	-Wind access setbacks	3	28	3	2 medium 5 large			
		- Scenic highway setbacks	1	18	1	10 medium 4 large			
		- Visual mitigations (section quatering)	0	372	77	0			
		- No turbines would be permitted along microwave beam E-D	0	0	0	0			
		- No development in NW 1/4 of Section 20 (Whitewater settling ponds - wildlife)	2 2/	126 3/	0	0			

V. SUMMARY OF PARCEL CONSTRAINTS

PREFERRED ALTERNATIVE

ALTERNATIVE TWO

Parcel	Applicant	Constraints Applied in Determining Boundaries	Number of Wind Turbine Generators Eliminated from Development: Windfarms	U.S. Windpower	Southern California Edison	PanAero	San Gorgonio Farms	City of Riverside	Smart
Whitewater Floodplain 22 Competitive 166 acres	Windfarms U.S. Windpower Southern California Edison Pan Aero	- Wind access setbacks	2	24	2	1 medium 2 large			
		- Scenic highway setbacks	0	0	5	0			
		- Visual mitigations (section quatering)	0	194	10	0			
		- No turbines would be permitted along microwave beam E-D and M-L	0	0	0	0			
Edom Hill Non-Competitive 65 acres	Pan Aero	- Wind access setbacks				9 medium 11 large			
		- 25 percent slopes				3 medium 1 large			
		- Scenic highway setbacks				3 medium			
		- Elimination of (2) turbines on the crest of Edom Hill - Flat top Mountain (Visual mitigation) in addition to wind access and scenic highway setbacks				2 medium 1 large			
		- Limit siting of turbines near Willow Hole to four medium size turbines							
		- No development of Section 26 due to lease held by Riverside County				16 medium 5 large			

V. SUMMARY OF PARCEL CONSTRAINTS

PREFERRED ALTERNATIVE

ALTERNATIVE TWO

Parcel	Applicant	Constraints Applied in Determining Boundaries	Number of Wind Turbine Generators Eliminated from Development						
			Windfarms	U.S. Windpower	Southern California Edison	PanAero	San Gorgonio Farms	City of Riverside	Smart
No Development Areas		No development would be permitted south of Painted Hill due to - Wind access setbacks - Pacific Crest Trail Setbacks	4		5				
No Development Areas		No development would be permitted in Devils Garden due to: - 25 percent slopes - Specific visual mitigations eliminating turbines - Pacific Crest Trail setback (if PCT is built along this ridge)	7						

V. SUMMARY OF PARCEL CONSTRAINTS

PREFERRED ALTERNATIVE

ALTERNATIVE TWO

Parcel	Applicant	Constraints Applied in Determining Boundaries	Number of Wind Turbine Generators Eliminated from Development: Windfarms	U.S. Windpower	Southern California Edison	PanAero	San Gorgonio Farms	City of Riverside	Smart
		No development would be permitted at Windy Point due to:							
		- 25 percent slopes	0	0					12
		- Scenic highway setbacks	1	78		20 medium			4/
		- Specific visual mitigation to protect an important landmark	0	0					4/
Total Eliminated from Development Under Alternative Two			25	1,107	161	167	61	1	12
Total Applied for by Applicants			50	2,750	925	309	95	8	12
Total Left			25	1,643	764	142	34	7	0

1/ The acreage available for the PanAero array is based on a 200 foot right-of-way width.
2/ Includes four WTG eliminated due to wind access and/or scenic highway setback.
3/ Includes turbines eliminated under section quartering.
4/ Exclusion due to a combination of slopes, highway setbacks and landmark protection.
5/ Four of the five WTGs would be eliminated because of wind access.

VI. Mitigation Measures

Resource	Mitigation	Applicable Location	Effectiveness
LAND USE			
Pacific Crest Trail (PCT) Crossing	No tower will be located closer than a distance of 1.25 times the height of the WTG.	All Public Lands	Reduce safety hazard to travel users.
Impacts of wind energy development on wilderness values	Do not allow wind energy development on 11,070 acres of public land recommended by BLM as suitable for Wilderness Preservation. Defer development on 3,150 acres recommended as non-suitable for wilderness.	Whitewater Wilderness Study Area	Effectively preserves wilderness values until a final decision by Congress as mandated in section 603(c) of FLPMA.
Wind Access	No WTG will be sited closer than a distance of 1 1/2 blade diameter widths from an east-west property line and 3 blade diameter widths from a north-south property line.	All Public Lands	Assure wind access in an equitable manner.
Interference with other land uses	No tower will be sited within a 1.25 times the height of the WTG from public highways, railroads, buildings and other structures.	All Public Lands	Effective in reducing the visual effects and possible safety hazards of turbine development.

Resource	Mitigation	Applicable Location	Effectiveness
	Permittees and other regular users of public land affected by the project will be notified in advance of any construction activity that may affect their operations. Additional fences, gates, cattleguards, and/or water improvements needed to maintain existing use areas and mitigate against improved (cattle) access into areas previously restricted due to topographic features will be provided at cost by the applicant after consultation with the grazing allottee and final approval by BLM. No WTG will be sited less than 1.25 times the height of the WTG from development springs.	North Whitewater and Alta Mesa	Reduce disturbances to range improvements and removal and cutting of fences.
Safety	Each WTG must be equipped with both manual and automatic controls to limit the rotational speed of the blade below the design limits of the rotor. Prior to construction the permittee will furnish BLM with a statement by a registered engineer certifying the electrical system complies	All Public Lands	Reduces the risk of rotor failure to acceptable levels. Would comply with County standards.

Resource	Mitigation	Applicable Location	Effectiveness
	with the National Electrical Safety Code and the Uniform Building Code.		
	The applicant will be required to develop a plan acceptable to the Federal Aviation Administration for siting WTGs near aircraft traffic areas.		
	The discharge of a firearm on Public land in the vicinity of a wind park is prohibited.		
	Perimeter fencing will be required around WTGs where access is provided to the WTG support structure creating a safety problem.		Access to the WTG will be restricted effectively reducing potential safety hazards.
VISUAL RESOURCES			
Windfarms	Remove the most southerly and two most northerly WTGs to comply with 25% slope restriction and 2/3 mile scenic setback from Interstate 10.	Painted Hill and Whitewater Hill	Would reduce site disturbance, contrast and dominance of the wind field so that visual resource objectives can be met.
	Relocate most southerly tower to an area northeast of present position to increase degree of distinctiveness.	North Whitewater and Alta Mesa	Would create "design" element on Alta Mesa and reduce contrast/dominance impacts close to visual standards without effecting overall visual resource quality.

Resource	Mitigation	Applicable Location	Effectiveness
	Remove three most northerly WTGs based on 25% slope restriction. Design array in two clusters to compliment the character of the landscape.		
	Limit WTGs to two distinct arrays along Devils Garden Ridge and remove two WTGs from Whitewater Hill because the area is a prominent visual landmark.	Devils Garden and Painted/Whitewater Hill(s)	Mitigation would be effective in creating complimentary WTG arrays thereby reducing visual contrast/ dominance so that the overall visual resource quality would not be effected negatively.
U.S. Windpower	Eliminate WTG siting on slopes over 25% and visually sensitive sites on the south side of Alta Mesa.	Alta Mesa/North Whitewater	Effectively mitigates proposal to meet visual resource objectives for this area.
	Impose setbacks 1/3 mile from Highway 111 and 1/4 mile from the tope of Whitewater Hill.	Whitewater Hill and	Reduces visual clutter and dominance.
	Reduce the number and location of machines in quarter sections	Whitewater River Floodplain	Create "free zones" and "reduce visual clutter".
	No development in NW 1/4, Section 22 No development in SW 1/4, Section 28 No development in SW 1/4, Section 20		
Southern California Edison	Same U.S. Windpower	Whitewater River Floodplain	Measures would effectively mitigate clutter and disorder thereby reducing visual contrast/dominance.
	Impose a modified setback of 1/4 mile from Interstate 10 and 1/4 mile from the top of Whitewater Hill.	Whitewater Hill	Natural break in topography will allow siting small WTGs less than 1/3 mile from a scenic highway.

MITIGATION MEASURES

Resource	Mitigation	Applicable Location	Effectiveness
	Restrict the siting of large machines in the area due to visual dominance.	Section 14	Removal of large machines would effectively reduce impacts to acceptable levels.
PanAero	Color code to accent Hamilton Standard WTG; subordinate colors on other WTGs using neutral colors which compliment the characteristic landscape; setbacks with use of uniform tower type 1/4 mile on each end of ROW(s).	Whitewater River Floodplain	Would effectively mitigate visual contrast/dominance due to clutter and disorder effects
	Limit development to slopes less than 25%. Develop Yucca Ridge with only large machines in designed arrays (see Windfarms).	North Whitewater Section 27 and 34, North of Alta Mesa	Greatly reduce clutter and disorder effects and limit visual contrasts caused by site disturbance on steep slopes.
	Design other two arrays with either uniform machines or limit to two machine types (large/medium).	Section 28 and 33	
	Use uniform machine types and do not permit development on exposed slopes of 25% or more.	Alta Mesa	

Resource	Mitigation	Applicable Location	Effectiveness
	Limit to a uniform machine type	Cabazon	Reduce visual impacts due to clutter and disorder to acceptable levels.
	No development on Flat Top mountain and the south side of Edom Hill.	Edom Hill	Reduce the level of contrast to acceptable levels.
	Permit uniform wind turbine types.	Section 28	
San Gorgonio Windfarms	(Same as U.S. Windpower and Windfrms)	Whitewater Hill	
City of Riverside	Relocate two wind turbines south of microwave the tower.	North Whitewater	Would effectively reduce visual dominance and not have negative effect on overall visual resource quality.
Smart and Company	Exclude development on slopes over 25%.	Windy Point	Meet County Hillside Development Standards.
	Exclude development along the crest of the ridge.	Windy Point	Prevent visual destruction of a significant landmark.
	Provide a setback of 2/3 mile from scenic Highway 111.	Windy Point	Preserve scenic quality along the major highway corridor into Palm Springs.
GEOTECHNICAL AND SOILS			
Damage to WTGs and ancillary facilities due to fault rupture.	No facility or structure will be located closer than 50 feet from the trace of an active fault.	All public lands	Surface rupture along an active fault would not result in a significant loss of generating capacity.

Resource	Mitigation	Applicable Location	Effectiveness
Potential earthquake damage to switchyard facilities and service buildings.	Design specifications to meet Riverside County Uniform Building Code.	All public lands	Only minimal damage to facility structures in the event of an earthquake.
Liquification	The applicant will conduct a geotechnical investigation to evaluate the potential for liquification. A mitigation plan will be submitted to BLM prior to construction. Identifying measures which will be used where liquified soils are a problem. The siting of large numbers of turbines, buildings, switchyards, and underground transmission lines will not be permitted in areas prone to deepseated liquifications.		
Landslides	WTGs will not be sited on unstable areas subject to landslides.	All public lands	Eliminate hazard.
Erosion of soil around base (scouring)	Depth of scour will be evaluated in site geotechnical evaluations to locate foundations and underground facilities below the depth of scourable materials.	Whitewater Floodplain	Reduces or eliminates hazard
HYDROLOGY			
Inundation of WTG sites by floodwaters	The BLM will coordinate with the Riverside County Flood Control District to insure that development plans are in compliance with County of Riverside Ordinance	Whitewater Floodplain	Minimize infiltration of flood waters and avoid impairment to facility structures during flooding.

Resource	Mitigation	Applicable Location	Effectiveness
	No. 458 which regulates the construction of facilities within a floodplain.		
Damage to tower foundations due to ground water withdrawal and/or subsidence.	Areas subject to deep or shallow subsidence will be mapped by the applicant and reviewed by BLM prior to final site approval.	Whitewater Floodplain	Identification of areas subject to subsidence will allow the incorporation of design modifications to compensate for the possibility of differential settling.
Potential damage to foundation material as a result of hydroconsolidation.	Areas which may be susceptible to hydroconsolidation will be identified. The applicant will provide for adequate surface drainage and the removal and replacement of unconsolidated material with compacted fill.	Whitewater Floodplain	Increase WTG stability.
BIOLOGICAL RESOURCES			
Collision hazard to migratory birds	Defer siting WTGs until radar studies conducted during the spring and fall of 1982 are completed (January 1982).	Painted Hill	Provide BLM with site-specific information to assess the impact of siting large wind turbines along the east crest of Whitewater Canyon. Based on the predicted number of collision mortalities and the species of birds a decision would be made on whether to permit turbines in the area.
Hazard to waterfowl using settling pond	Prohibit development.	Whitewater Floodplain W1/2, W1/2, Section 20	Reduce collision hazard to resident and migratory waterfowl.

Resource	Mitigation	Applicable Location	Effectiveness
Destruction of threatened animal habitat (Coachella Valley Fringe-toed Lizard) through WTG placement, accessroad and transmission line construction -- and possible direct loss of some animals	Roads and other facilities may be located to avoid disturbance to individual sand dunes. When feasible, roads would be placed on the up-wind wide. Facilities that would function as windbreaks would be placed on the downwind side of individual dunes. The applicant will conduct a study to monitor noise levels in the air and vibration levels in the soil created by wind turbine generators by generator model at exact distances from the generator. The impact of such noise levels on the CVFTL and other reptiles in the area will be evaluated in a special report. BLM will fund a feasibility study to determine the usefulness of a model in predicting long-term effects of wind energy turbines on sand distribution patterns, quantity and quality. A preconstruction survey for CVFTL along proposed transmission lines, access road centerlines, and tentative WTG sites will be conducted by the applicant, method subject to BLM approval, to determine how to avoid or mitigate impacts on specific areas susceptible to	All public lands, especially Whitewater Floodplain (see Map 3-5).	Protection of considerable CVFTL habitat. Potential for sand build-up on roads could be reduced.

Resource	Mitigation	Applicable Location	Effectiveness
	increased wind and water erosion. The areas of concern will include designated floodways, flood-prone areas, and source transport, and deposited areas for blowsand. Special attention should be given to hummocks containing desert willow clumps, since these represent the best CVFTL. All of these hummocks will be marked and not destroyed during or after the construction phase. BLM will delineate suitable blowsand habitat in the Whitewater Hill and Edom Hill parcels and monitor these areas (using aerial photography) annually to determine if, and to what extent, shifts in blowsand distribution, quality or quantity occur. Determination of quality of habitat will include data on sand particle size, vegetation and compaction.		
Destruction of rare plants of concern where populations are in the path of WTGs and other facilities	Require the applicant (botanist) to survey the exact boundaries of known populations. Boundaries will be staked and access roads and WTG sites re-routed to avoid these populations.	All public lands	Avoid destruction of most rare plant populations.
NOISE			
Noise producing equipment used to erect WTGs during construction phase	Limit construction to daylight hours.	All public lands	Reduce noise levels to the normal workday.

Resource	Mitigation	Applicable Location	Effectiveness
Impacts on residential development	WECS will meet the requirements of the noise element in the Riverside County General Plan.	All public lands.	Standard contained within the noise element will help determine whether such noise is in violation of local policies.
	The applicant will develop a contingency plan subject to BLM approval, three months prior to operation to handle potential complaints before construction begins. The plan will include an assigned complaint officer and telephone number published where interested persons can locate them readily. The contingency plan will resolve any complaints within the areas of audible or radio noise, television interference, and electrical (including electo-magnetic and electro-static) influence on any equipment, instruments, and appliances. The contingency plan will also be able to resolve any complaints involving health and safety in the areas described above.	All public lands	Construction or operation activities of any suspected turbine(s) would be discontinued until an investigation is conducted to determine the cause and effect of the problem.
"Thumping" noise associated with large downwind turbines.	Any downwind WTG will be tested (and the results submitted to BLM) to determine if the wind turbine will generate the "thumping" noise.	All public lands	Eliminate "thumping" noise.
	No WTG will be sited that results in generation of the noise.	All public lands	

Resource	Mitigation	Applicable Location	Effectiveness
	No WTG will be located within 1/4 mile of any residence.	All public lands	
COMMUNICATION INTERFERENCE			
Microwave Interference	No wind turbine generators will be sited within twice the half-power beam width of a receiving microwave signal.	All public lands	Received signal levels beyond the beam width of a microwave antenna will be significantly reduced, thus reducing any reflections from a wind turbine.
	No WTG will be sited such that a transmitted microwave signal is directly impeded by a generator or is within twice the beam width of the transmitting antenna.	All public lands	Prevent physical obstruction of the microwave signal and reduce the absorbtion of microwave energy for objects near the beam width.
Windfarms			
Beam N-P and P-N	Remove southernmost WTG.	Phase I	Potential interference would be eliminated.
Beams EE-GG, N-P, K, K-II, N-O, BB-CC, AA	Eliminate WTG located south of microwave site on Whitewater Hill	Phase III	Potential interference would be eliminated. Turbine just north of the site is close to a passing beam, but is just past the zone of interference.
Beam E-D	Remove or relocate three northern-most turbines.	Phase IV	Interference resulting from WTG siting would be eliminated.

U.S. Windpower

Beam EE-FF	None except possibly first few turbines sites south of microwave site.	Phase I, Section 34	
Beams N-P, K-I, and K-II	No turbines within 0.4 miles of the microwave site along a 12 degree cone.	Phase II, Whitewater Hill	No impediment further away due to lower elevations.
Beams N-O, Site K, and N-Q	No siting within 700 feet of microwave sites N and K.	Phase II, Whitewater Hill	Beyond this location all beams will be above the rest of the turbines due to slope.
Beam B-E	No turbines over 70 feet tall within a 5.5 degree beam width.	Section 14.	Interference caused by machines located in northern part of the Section would be eliminated.
Beam B-E	Preclude all turbines within 11 degree beam width.	Phase II, Windy Point	Windy Point may afford some shielding which may allow more WTGs, but more site investigation is needed.

Southern California Edison

Beam B-E	Structures over 70 feet would be precluded within the 5.5 beam width.	Boeing Site	Will eliminate siting problems in the northeast part of the section due to low beam elevations.
Beam N-P	No turbines will be allowed inside a 12 degree beam width from a distance of 3700 feet.	WECS Tech Site	
Beam M-L	No medium size turbines will be located within a 8 degree beam width.	Westinghouse Site	

Resource	Mitigation	Applicable Location	Effectiveness
PanAero			
Beam E-D	Preclude two northern most large turbines.	Facility I, Section 20	
Beam M-L	No turbines in east half of Section.	Facility I, Section 22	
Beam EE-DD	Beam passes over one turbine which will be eliminated.	Facility II, Section 33	
Beam EE-GG	Remove turbine proposed just SW of microwave site.	Facility II, Section 34	Beam interference will be eliminated, however, this entire group of turbines may be too close to the microwave site. Followup site investigations are needed.
Beam B-E	Eliminate two large and three medium size turbines in northeasternmost corner.	Facility II, Section 14	Turbines will be eliminated within beam width.
Beam B-E	Prohibt all but northernmost vertical axis WTG along center row.	Facility II, Windy Point	Elimination would prove effective in reducing interference within the 5.5 degree beam width.
San Gorgonio Farms			
Beam N-P	No turbines will be allowed inside a 12 degree beam width out to 3700 feet.	Phase I, II, and III	
City of Riverside			
Beam FF-EE	No turbines will be sited along the beam width within 660 feet of microwave site.	Section 34	

Resource	Mitigation	Applicable Location	Effectiveness
Beam DD-EE	No turbines along 2.2 degree beam except between 700 feet and 2300 feet from microwave site.	Section 34	
Smart	Eliminate two turbines in the northeasternmost section of the wind park.	Windy Point	Exact turbine locations are uncertain, but appear to be located in a position which may cause interference.
Television interference front site or back	Replace omni directional or marginally directional antenna with single channel antenna.		Considerable rejection of interference can be realized from front-to-side and front-to-back.
from one direction	Two antennas can be electrically phased together.		Partially cancel interference.
	In those areas where a WTG is sited in the direct path between the receiver and television station and normal mitigation is ineffective, the applicant will: (1) pay initial hook-up fees for resident cable TV, or (2) install a TV translator.		Will increase coverage and signal strength improving TV reception. Site-specific problems may still exist.
Radio interference FM Radio	Exchange interior antenna with an external high gain, directional antennae.	All public land	Offer significant increase in signal strength and discriminate against interference.
Two-way radio, interference to mobile communications	Move the receiver out of the path of WTG and transmitting station.		Moving the receiver will not always prove to be effective alternative in improving communications.

Resource	Mitigation	Applicable Location	Effectiveness
	Use of nonmetallic blades will be required by BLM in instances where critical areas of interference develop.		Replacing metal blades with fiberglass or wood laminate will be an effective deterant in most instances.
AM Radio	Same as FM Radio.		

VII. Standard Operating Procedures

1. Uses of public lands not yet specifically addressed in this environmental impact statement (EIS) will be subject to further environmental assessment and possible modification by the Authorized Officer (AO).

Effectiveness. This intensive and specific evaluation would enable the Authorized Officer (AO) to reduce or mitigate most of the adverse environmental impacts associated with any proposed development.

2. The Grantee will do everything reasonable, both independently and/or upon request of the AO, to prevent and suppress fires caused by the grantee, his contractors or sub-contractors on or near the lands occupied. The applicant will comply with any fire plan submitted by the land management agency with jurisdiction over lands crossed by the project.

During construction in areas where fire hazards exist, all vehicles and gas-powered equipment will be equipped with spark arrestors. A fire patrolman with a pumper-equipped pickup truck will be on site where necessary. If required, fire-fighting equipment will be located in cache boxes along the right-of-way at strategic locations. All welding, grinding operations and smoking privileges will be controlled in fire danger areas. When weather conditions create an extreme fire danger, construction operations will be limited or suspended in specific areas as required by the applicable authorizing agency. The grantee will establish a project fire plan and all project personnel will be instructed as to individual responsibility in implementation of the plan. Federal, private, and State interests will be compensated by the grantee for suppression and rehabilitation expenses as per existing statutes.

Effectiveness. The possibility of fires would not be eliminated. Identifying liability for such fires may tend to make the grantee more cautious. Various interests would be protected against loss due to fire.

3. The grantee shall comply with applicable Federal, State, and local laws and all regulations issued thereunder affecting in any manner construction, operations, and maintenance, or termination of the system.

Effectiveness. Commitment to this stipulation would enhance protection afforded by such laws and regulations.

4. The grantee shall take all measures to protect the health and safety of all persons affected by its activities performed in connection with the construction, operation, maintenance, and termination of the system, and shall immediately abate any health or safety hazards.

The following measures will help ensure compliance with Occupational Safety and Health Administration (OSHA) and provide for public and worker safety:

a. Comply with speed limits established by BLM on all roads for purposes of dust control and public safety;

b. Perform dust-control measures on all roads, staging areas, borrow areas, heliports, etc., when loss of visibility due to dust causes a safety hazard.

c. Provide appropriate signing of roads and helicopter staging areas to provide for public safety, where considered necessary by BLM;

d. Sign roads and helicopter staging areas appropriately for public safety purposes, such as "Caution Heavy Truck Traffic" or "Be Prepared to Stop," where such signs are considered necessary by the liaison officer;

e. Place signs on substations to warn the public of high voltage;

f. Provide flagmen, barricades, and other safety measures to ensure public safety, as directed by the authorized BLM officer;

g. All work with explosives will be performed in such a manner as to create no endangerment to life or property; all storage places for explosives and flammable material will be marked "dangerous," the method of storing and handling explosives and flammable materials will conform to all relevant Federal, state, and local laws and regulations; fuses will not be used in blasting.

h. Blasting will be used only when necessary. Where blasting is necessary, the following safety precautions will be taken:

(1) in areas of human use, blasting will be blanketed;
(2) landowners in close proximity to the blasting will be notified in advance so that livestock and other property can be adequately protected;
(3) before blasting a clearance will be necessary to ensure that construction personnel and local residences were out of danger; and
(4) blasting will be controlled or limited where damage to rock mass may create slope instability.

Effectiveness. Adherence to this stipulation would promote a safe work environment for employees and the general public.

5. The grantee will provide botanists, archaeologists, wildlife biologists, and other specialists as appropriate (subject to approval of the AO), for all necessary surveys in areas to be disturbed by the project.

These individuals must have the necessary valid permits or licenses. Separate permits shall be required for survey and mitigation excavation.

Effectiveness. This measure would provide consideration for sensitive values in the fields of professions identified. This would provide a high degree of protection for surface resources; somewhat less for subsurface resources.

6. The grantee will observe the following sanitation measures to help prevent contamination of ground or surface waters and soils:

a. Remove or dispose of all participant-generated waste in a manner satisfactory to the liaison office. The term "waste" as used here means all discarded matter, including but not limited to human waste, trash, garbage, refuse, oil drums, petroleum products, ashes, and equipment. Construction sites will be maintained in a sanitary condition at all times, and garbage and refuse at those sites will be disposed of promptly.

b. Follow a litter-policing schedule on all roads associated with the project.

c. Prevent the release or disposal of used oil and other petroleum products on any lands or bodies of water.

Effectiveness. Visual quality and safety would be enhanced.

7. Final road and WTG construction engineering specifications (including WTG-site surveys, substations and transmission line systems designs and locations, locations of borrow sites, stockpiling, and storage areas, specific drainage devices proposed, work schedule, needed equipment, rehabilitation measures, waste disposal methods, proof of state and local permits will be supplied in writing to BLM for study and approval 60 days prior to proposed construction. Any changes in schedule will be submitted to BLM at least 30 days in advance of construction.

Effectiveness. Such submission would provide sufficient time for necessary planning.

8. The grantee will be required to coordinate with the affected Federal, state, and local transportation authorities regarding road development.

Effectiveness. Conflicts with affected parties would be minimized.

9. Liquid and solid wastes must be disposed of according to provisions of the Resource Conservation and Recovery Act of 1976 (and amendments).

Effectiveness. Provisions are designed to protect elements of local ecosystems and human health and safety to the best means practical.

10. Water bars will be constructed on permanent direct or gravel access roads to adequately divert runoff to natural drainages. The location of water bars will be determined by the AO. Roadside drainage ditches will be constructed on access roads to reduce water flow and velocity. Drainage ditches will be dug at intervals determined by the AO. Roads will be "out-sloped" as much as possible. Berms will be removed.

Effectiveness. This measure would be helpful in preventing or controlling erosion. The degree of effectiveness cannot be determined at this time.

11. Scalping of topsoil will not be allowed except as approved by the AO. When scalping is allowed, suitable topsoil and subsoil will be scraped and stockpiled for reclamation use.

Effectiveness. The stockpiling and respreading of topsoil would make it possible to establish a suitable seedbed.

12. Access roads will be properly built in flood prone and flash flood areas to avoid erosion and gullying.

Effectiveness. The degree of effectiveness cannot be determined at this time. However, significant erosion problems may be avoided.

13. To minimize the potential of collisions and electrocution of raptors, the design of transmission lines and towers will conform to the guidelines for raptor protection described in the Raptor Research Report No. 4, Raptor Research Foundation, Inc. 1981. These guidelines provide design and modification of poles, cross arms, wire placements to effect adequate separation of energized hardware; insulation of wires and other hardware where sufficient separation cannot be attained; and management of eagle perching. In addition, all transmission lines facilities should avoid crossing ridge tops to avoid bird and tower line collisions.

Effectiveness. This measure will minimize impacts on raptors in areas of construction.

14. The grantee shall report any raptor electrocutions, discovered or reported on or near project facilities to the AO.

Effectiveness. Reporting of wildlife kills would aid in determining problem areas. Once the problem would be determined, corrective action could be taken; however, effectiveness would be highly variable.

15. The grantee shall not use water from springs, wells, seeps, creeks, or streams which have been appropriated to Federal agencies or other users without the written authorization from the AO or water rights owner.

Effectiveness. The potential for conflicts arising over unauthorized use of water would be greatly reduced.

16. Any water used with the approval of the AO or water rights owner shall be only for the specific purpose and duration described in the written authorization of the AO or water rights owner.

Effectiveness. The potential for conflicts arising over unauthorized use of water would be greatly reduced.

17. Upon revocation or termination of this grant, or termination of use of any part of the energy system located on public lands, the grantee shall remove all improvements and equipment, except as otherwise approved in writing by the AO, and shall restore the land to a satisfactory condition as determined by the AO.

Effectiveness. Abandoned improvements and equipment would be prevented from becoming an eyesore and/or safety hazard.

18. The grantee shall avoid areas subject to mudflows, landslides, mudslides, avalanches, rock falls, and other types of mass movements when locating wind turbine generators and powerlines.

Effectiveness. Avoidance of or designing for such conditions would be effective in lessening associated dangers. Avoidance would be highly effective.

19. No dumping of oil waste, toxic materials, solid or liquid wastes will be allowed except in authorized waste disposal sites. No burying of debris or waste materials will be allowed except as specifically authorized by the AO.

Effectiveness. This would protect against contamination of ground water and surface water and would prevent air pollution from these sources.

20. Specific sites (e.g., archaeological sites, areas with threatened and endangered species, fragile watershed, etc.), where construction equipment and vehicles will not be allowed will be clearly marked on the site by the AO before any equipment is brought in. The grantee will be responsible to assure that construction personnel are well versed in recognizing these markers and that they understand the restrictions of equipment movement that are involved.

Effectiveness. This measure would enhance protection of identified sites.

21. Travel will be restricted to rights-of-way and existing public roads. Cross-country motor vehicle travel will be prohibited.

Effectiveness. This measure would reduce impacts on soil and vegetation outside access roads and immediate construction areas.

22. The grantee or permittee shall confine all activities within the area specifically defined in the right-of-way or permit.

Effectiveness. This measure would reduce impacts on soil and vegetation outside access road and immediate construction areas.

23. The grantee or permittee shall make application in accordance with applicable regulations for all proposed access roads not granted in the primary right-of-way or permit and located on public lands outside the permit or grant area.

Effectiveness. This measure would greatly reduce unnecessary soil and vegetation disturbance and would help hold allowed disturbance to a minimum.

24. After construction activities are completed, the grantee or permittee shall not prohibit the public in general from using the grant or permit

area for all lawful purposes which are not inconsistent with the use for which the grant or permit was issued.

Effectiveness. The rights of the general public to use publicly owned land would be protected.

25. The grantee or permittee will be allowed to regulate access and vehicle traffic as required to insure security and public safety during construction operations.

Effectiveness. Allowing the grantee to regulate access and vehicle traffic would be effective in providing for public safety and security during construction operations.

26. The grantee or permittee shall be responsible for providing and installing regulatory signs that are necessary for users of access roads. The location and type of sign shall be approved by the AO.

Effectiveness. The safety of the users of public roads would be enhanced.

27. The grantee or permittee shall permit free and unrestricted access over public lands for all lawful and proper purposes, except in areas designated as restricted by the grantee or permittee with the consent of the AO, in order to protect public safety, health, and facilities constructed on the right-of-way.

Effectiveness. The rights of the general public to use publicly owned lands, consistent with safety requirements, would be protected.

28. The grantee acknowledges and agrees that the issuance of this permit or grant is subject to the express condition that the exercise thereof will not unduly interfere with the management, administration or disposal by the United States of lands affected thereby or the full and safe utilization thereof by the United States, for necessary operations incident to such management, administration, or disposal for purposes which are not inconsistent with or will not defeat the objective of the grant.

Effectiveness. Commitment to this stipulation will protect the prerogative of the United States to manage public lands of the United States.

29. The grantee agrees and consents to the occupancy and use by the United States, its grantees, permittees, or lessees of any part of the permit or grant area not actually occupied or required by the project for purposes which are not in conflict with the grantees' or permittees' activities and use.

Effectiveness. Commitment to this stipulation will protect the prerogative of the United States to manage public lands fo the United States.

30. The grantee agrees that all operation under this grant or permit shall comply with State and Federal laws concerning the use of poisonous or hazardous substances, including insecticides, herbicides, fungicides, rodenticides, and other similar substances. Prior to the use of such substances on or near the permit or grant area, the grantee shall obtain

from the AO approval of a written plan for such use. The plan shall state the method of application and other information as the AO may require. All use of such substances on or near the grant or permit area shall be in accordance with the approved plan. If the use of a poison is prohibited by the Secretary of the Interior, it shall not be used. If use of a poison is limited by the Secretary of the Interior, it shall only be used in accordance with that limitation.

Effectiveness. Commitment to this stipulation will insure compliance with Federal and State laws in the use of poisonous or hazardous substances. It would not insure that environmental damage would be avoided where the use of such substances were allowed.

31. The grantee will avoid disturbance or removal of cadastral survey monuments and markers. Where construction operations require such removal and relocation, this will be accomplished by BLM or in accordance with detailed instructions prescribed by the AO. All costs for such operations will be borne by the grantee or permittee.

Effectiveness. This measure will greatly reduce the possibility of located survey monuments and markers being disturbed. There would remain a chance that unidentified monuments could be destroyed.

32. Cut and fill slopes will be shaped to existing land contours. All natural drainages will be preserved.

Effectiveness. Shaping of cut and/or spoil slopes would be effective in blending these areas with the land form. However, visual impacts would remain due to vegetational differences.

33. All clearing of construction areas will be free form and will respond to the existing forms and shapes in the area (i.e., use of curvilinear shapes rather than rectilinear). Temporary sites will be kept as small as possible and will be located in areas of minimum vegetation and slope.

Effectiveness. This type of clearing would be effective in reducing visual impacts. However, degree would be site specific.

34. All exposed facilities will be painted with colors selected for compatibility with the surrounding environment except where human safety consideration would dictate otherwise.

Effectiveness. Visual impact of facilities would be lessened, though degree of effectiveness cannot be determined at this time.

35. All conductors will be of nonspecular material unless otherwise approved by BLM/National Regulatory Commission.

Effectiveness. This measure would decrease visibility of wires and poles and would help to make them blend with the background.

36. No paint or permanent discoloring agents will be applied to rocks or vegetation for indicating survey or construction activity limits, points, etc.

Effectiveness. This measure would eliminate impacts which would occur from such activity.

37. Where vegetation needs to be cleared for construction but not for actual operations it will be clipped at ground level to allow resprouting.

Effectiveness. Reduce the length of time required for site recovery.

38. Where recommended and approved by the Bureau, vegetation removed during construction will be shredded and disposed of at an approved dump site or stockpiled to be used as mulch for erosion protection.

Effectiveness. Adherence would decrease the risk of fire and improve site rehabilitation.

39. Excess soil material created during pad construction will be used as fill for roads or removed to a suitable dump site. Under no condition will this material be disposed of at locations which could interfere with natural drainage channels.

Effectiveness. Limit area of disturbance to permanent facilities.

40. Metal surfaces of substations will be dull. If paint or concrete is used it will be of a dull surface and of colors complimentary to the surrounding landscape.

Effectiveness. Reduce contrast to blend with surrounding landscape.

41. A preconstruction survey of the surveyed transmission line and access road centerlines and the tentative WTG sites will be conducted by the applicant, subject to BLM approval, to determine how to avoid or mitigate specific areas susceptible to increased wind and water erosion. These will include areas such as desert pavement and erodible soil on steep slopes, designated floodways, floodprone areas, and source, transport and deposition areas for blowsand.

Effectiveness. This measure would limit the amount of wind and water erosion.

42. Avoidance of identified cultural resources is the preferred archaeological mitigation. Where technically feasibile, tower sites, access roads, storage sites, and substation sites will be shifted away from all identified cultural resources.

a. After completion of the engineering survey, a qualified archaeologist provided by the grantee will complete an intensive archaeological inventory (BLM Class III) and of all areas to be disturbed using the following guidelines:

(1) Institutions and individuals conducting the inventory work will be qualified to complete a professional archaeological inventory and must be acceptable to BLM. Such work must be completed under an Antiquities Permit.

(2) The results of the archaeological and historical field inventory will be submitted to the BLM three months prior to construction. The report will detail findings of the inventory and make recommendations or further resource protection, either via avoidance or data retrieval studies. All cultural resource sites that cannot be avoided will be mitigated according to a detailed plan submitted to BLM. Such mitigation will not begin until BLM approval of the mitigation plan is obtained.

(3) All sites will be evaluated for possible inclusion on National Register of Historic Places and the applicant (with BLM concurrence) will complete the necessary documentation for nomination and submission to the State Historical Preservation Officer (SHPO).

(4) All sites/districts that qualify for the National Register of Historic Places should be avoided by construction activity. If avoidance is not feasible, the applicant will indicate this to BLM. Such notificaton will be made prior to construction and will include proposed mitigation measures. In such cases, a statement of effect in compliance with the Natural Historic Preservation Act, Section 106, will be completed prior to the commencement of surface disturbance.

b. The applicant's project archaeologist will flag the perimeters of those archaeological sites that are to be avoided. Flagging will be done just prior to the construction period and removed as soon as construction activity has moved on.

c. The applicant will determine, through the project archaeologist and in consultation with the BLM and SHPO, what protection measures will be afforded individual archaeological sites during construction.

Effectiveness. The BLM would apply consistent management practices on public lands for all archaeological and historic resources, conveying information to the SHPO or other agencies as appropriate. Regulatory conformance would be enhanced.

These measures will be highly effective in preventing damage to cultural resources and in preventing damage to subsurface resources beyond that caused during discovery in those areas surveyed. All sites, will be given proper consideration for inclusion on the National Register of Historic Places.

43. The grantee will immediately bring to the attention of BLM all antiquities or other valuables of cultural or scientific interest, including (but not limited to) historic and prehistoric sites, fossils, and artifacts discovered as a result of construction operations under this permit, and will leave such discoveries intact until clearance to proceed is granted by a project archaeologist. BLM will evaluate any discoveries and determine within ten working days what action will be undertaken prior to proceeding with any operations that might be destructive to such discoveries.

Effectiveness. Improve current understanding of site locations, contents and sensitivity, Re-routing roads and structures to avoid identified sites would be effective in limiting damage to cultural resources.

44. Recommendations to mitigate adverse impacts to Native American Values will be developed through consultation and coordination with affected Native American communities prior to project development. Where site specific concerns exist, it may be possible to mitigate potential effects through project design overflow siting of facilities. It is anticipated that some categories of potential impact, e.g., impacts to "sacred sites" may not be as accessable to mitigation. The nature and extent of such impacts will be dependent upon the final location of the WTGs.

45. The grantee will temporarily mark the exterior limits of the rights-of-way during construction in a manner that will not result in additional environmental damage. All activities directly or indirectly associated with the construction or maintenance of rights-of-way must be conducted within these limits unless prior notice has been given to BLM or the appropriate land-holding agency or individual and permission has been granted to extend activity beyond the limits of the right-of-way given by that agency or individual. Each case must be approved individually.

Effectiveness. Minimize site disturbance to approved rights-of-way.

46. For overhead transmission lines 34.5 kV and below, the right-of-way width will not exceed 30 feet for one free-standing double-circuit wood pole. Any variations from these specifications will require approval by BLM.

Effectiveness. Provide a necessary working space for transmission line construction while minimizing area disturbance.

VIII DECISION RECOMMENDATION

The California Desert District recommends that Alternative Two be implemented to allow for competitive and non-competitive right-of-way grants on public lands in the San Gorgonio Pass for the development of wind energy resources.

Bryan H. Robinson — 7/19/82

Bryan H. Robinson
Area Manager
Indio Resource Area

Date

Gerald E. Hillier — 7/21/82

Gerald E. Hillier
District Manager
California Desert District

Date

IX DECISION

I concur:

Ed Hastey — 7/26/82

Ed Hastey
State Director, California

Date

BLM Library
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Denver Federal Center
P.O. Box 25047
Denver, Colorado 80225